



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/566,120

01/25/2006

Ermanno Filippi

9526-71

3688

30448

7590

07/06/2009

AKERMAN SENTERFITT

P.O. BOX 3188

WEST PALM BEACH, FL 33402-3188

EXAMINER

BHAT, NINA NMN

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

07/06/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,120	<b>Applicant(s)</b> FILIPPI ET AL.	
	<b>Examiner</b> N. Bhat	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 January 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Applicant's arguments have been fully and carefully considered. The amendments to the specification which notates entry into National Stage as well the correction of the abstract are noted and the objections are withdrawn. The examiner notes that applicant has not amended any of the claims. Applicant's arguments regarding the art rejections are persuasive. The obviousness type double patenting rejections are also withdrawn over the Filippi patents '873 and '520 patents. However, upon reading applicant's arguments a new search has been conducted and new references will be applied against applicant. Further, based on applicant's arguments it is the position taken by the Office that a 112, second paragraph rejection on claim 1, will be set forth which will be delineated below:

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, applicant recites, at least one heat exchange unit comprising a plurality of heat exchanges characterized in that one of the exchanges consists of a coil obtained from a a single tubular element and has substantially parallelepiped, flattened overall dimension. The recitation "substantially parallelepiped, flattened overall dimension" which has been argued by applicant for distinction over the art, is not clear. A parallelepiped is a a polyhedron or a solid with six faces, each a parallelogram and each being parallel to the opposite face. It is not clear that the coil of tubing or pipe has 6 sides and is flattened. Applicant is suggested to claim what is shown in the drawing wherein the plate heat exchanger is parallelepiped in shape onto

Art Unit: 1797

the plate is a serpentine or flattened pipe or tube connected to the heat exchange plate.

The term parrallelpiped in context with the tube is confusing in the claim, it is clear from the drawing what applicant intends however, the claim must stand on its own with the drawing for interepretation. Suitable correction is required.

3. Claims 2-12 are objected to as being dependent upon a rejected base claim.

The examiner further notes that applicant has used "characterized in that" language in the claims and the examiner suggests that this phrase be replaced with --wherein-- which conforms with US practice of claim drafting. This is not a requirement but only a suggestion.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim1-12 rejected under 35 U.S.C. 103(a) as being obvious over Filippi et al., EP 1 279 915 in cmbination with Valensa et al., US Pagent 7, 104,314.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Filippi et al. teach the invention substantially as claimed. Specifically, a heat exchange unit for an isothermal reactor includes a plurality of box shaped plate exchanger (14) which is disposed within a cylindrical reactor vessel (2). [Note Paragraph 0003] The heat exchange unit (13) comprises a plurality of heat exchangers (14) regularly distributed in three coaxial and concentric rows. The exchangers (14) are arranged with their long sides (14a) parallel to the axis of the vessel (2) and the short sides extended radially with respect to the reactor. The exchangers (14) are made of a pair of juxtaposed metallic plates (15, 16) joined together through perimeter soldering and

Art Unit: 1797

separated at a predetermined distance so that a chamber (18) is defined between the plates providing a passage for heat transfer to fluid to flow therethrough. [Note paragraphs [0013 to [0019]. However, the heat exchanger plates do not include a tube or pipe which is flattened against the sheet or a flattened tube heat exchanger. The concept of providing a parallelepiped flattened overall dimensioned heat exchanger has been taught in Filippi et al. as shown in Figure 1 and Figures 2-3.

However, Filippi et al. do not teach the singular tubular element having a substantially parallelepiped, flattened overall dimension.

Valensa et al. teach the deficiencies of Filippi et al. by teaching a heat chamber made from flattened tubes having a flattened overall parallelepiped overall dimension which is shown in Figure 2. Valensa et al. teach a multi-pass heat exchanger which is made from flat tubes of aluminum. The heat exchanger can include a plurality of flattened tubes as shown in Figure 2 as multiple layers as shown in Figure 1. The heat exchanger layers (12) are arranged in a generally parallel manner, but one flattened tube arrangement has been contemplated by Valensa et al. The heat exchanger including the pairs of flattened tubes can be used in a reactor such as a reforming reactor as described by Valensa. [Note Column 3, lines 5-15, lines 40-60, Column 4, lines 7-51 and Column 6, line 25]

It would have been obvious from the combined teachings of Filippi et al. and Valensa et al. to use a heat exchanger in a pseudo isothermal chemical reactor for a heterogeneous chemical reaction which includes a cylindrical reactor which includes a reaction zone disposed within the cylindrical reactor and a plurality of heat exchanger

Art Unit: 1797

disposed in cylinder. The heat exchangers are plate type heat exchanger units or plates have substantially a parallelepiped overall flattened dimension. The reactor structure and heat exchanger construction and arrangement has been substantially taught in Filippi et al. The only difference is that a plate heat exchanger is used instead of the desired single tubular element having a flattened parallelepiped overall dimension. This type of heat exchanger has been taught and described in Valensa wherein a flattened tube in a box like shape has been taught to be used singularly or a plurality of the flattened tubes can be used and disposed within a container. Valensa specifically teach that the flattened tube heat exchanger can be used in a reactor or fuel cell environment particularly suitable for use with reformers. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a pseudo isothermal chemical reactor for conducting heterogeneous chemical reactions which includes a reactor having disposed therein heat exchangers and reaction zone wherein at least one of the heat exchanger is made for tubular pipe or coil which has substantially parallelepiped flattened overall dimension because the reactor has been taught substantially from Filippi to replace the plate exchanger for the flattened tubular heat exchanger taught in Valensa would have been obvious to one having ordinary skill in the art because both the plate heat exchanger of Filippi and Valensa are functionally equivalent, i.e., both are heat exchangers capable of heating or cooling the reactor. The plate heat exchanger is disposed within a isothermal reactor. Valensa teach that the flattened tube heat exchanger can be used in a reforming reactor and therefore to substitute the flattened tube heat exchanger of Valensa for the plate

Art Unit: 1797

heat exchanger used in reactor of Filippi et al. would have been an obvious substitution to the ordinary artisan because the purpose of the heat exchangers are the same, the heat exchanger has been used in a reactor environment and therefore substitution is permissible and has been suggested by the prior art thus rendering applicant's invention as a whole obvious to one having ordinary skill in the art at the time the invention was made.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Filippi et al. teach multiservice heat exchange unit. Fillipi et al. teach a heat exchange unit for isothermal chemical reactors.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1797

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Bhat/  
Primary Examiner, Art Unit 1797